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01-NOV-1997 (Rel. 35, Last annotation update)
METALLOTHIONEIN A (MTA) (FRAGMENT).
Colinus virginianus (Bobwhite quail) (Common bobwhite).
Colinus virginianus (Bobwhite quail) (Common bobwhite).
Eukaryota, Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Archosauria; Aves; Neognathae; Galliformes; Phasianidae;
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Shartzer K.L., Kage K., Sobieski R.J.,
"Evolution of avian metallothionein: Di
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FUNCTION: METALLOTHLONEINS HAVE A HIGH CONTENT OF CYSTEINE RESIDUES THAT BIND VARIOUS HEAVY METALS.

DOMAIN: CLASS I METALLOTHLONEINS CONTAIN 2 METAL-BINDING DOMAINS: DOMAIN CLASS I METALLOTHLONEINS CONTAIN CLUSTER A OF THE ALPHA FOUR DIVALENT IONS ARE CHELATED WITHIN CLUSTER A OF THE ALPHA DOMAIN AND ARE COORDINATED VIA CYSTEINYL THOILATE BRIDGES TO 11 CYSTEINE LIGANDS. CLUSTER B, THE CORRESPONDING REGION WITHIN THE BETA DOMAIN, CAN LIGATE THREE DIVALENT IONS TO 9 CYSTEINES. SIMILARITY: BELONGS TO FAMILY 1 IN METALLOTHIONEIN SUPERFAMILY.
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                      SWISS-PROT entry is copyright. It is produced through a collaboration en the Swiss Institute of Bioinformatics and the EMBL outstation -
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-: FUNCTION: METALLOTHIONEINS HAVE A HIGH CONTENT OF CYSTEINE RESIDUES THAT BIND VARIOUS HEAVY METALS.

-: DOMAIN: CLASS I METALLOTHIONEINS CONTAIN 2 METAL-BINDING DOMAINS: FOUR DIVALENT IONS ARE CHELATED WITHIN CLUSTER A OF THE ALPHA DOMAIN AND ARE COORDINATED VIA CYSTEINVI THIOLATE BRIDGES TO 11 CYSTEINE LIGANDS. CLUSTER B, THE CORRESPONDING REGION WITHIN THE BETA DOMAIN, CAN LIGATE THREE DIVALENT IONS TO 9 CYSTEINES.

-: SIMILARITY: BELONGS TO FAMILY 1 IN METALLOTHIONEIN SUPERFAMILY.
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een the Swiss Institute of Bioinformatics and the EMBL outst
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RA Addams M.D., Celniker S.E., Holt R.A., Evans C.A., Gocayne J.D., Andams M.D., Celniker S.E., Lin P.W., Hoskins R.A., Galle R.E., Rachards S., Ashburner M., Henderson S.N., RA Bananatides P.G., Scherer S.E., Kichards S., Ashburner M., Henderson S.N., RA Brandon R.C., Woyers Y.-H.C., Blazej R.G., Champe M., Pfeiffer B.D., RA Burtis K.C., Rogers Y.-H.C., Blazej R.G., Champe M., Pfeiffer B.D., RA Ballew R.M., Basu A., Baxter E.G., Helt G., Nelson C.R., Millos G.L.G., RA Ballew R.M., Basu A., Baxter E.G., Helt G., Nelson C.R., Millos G.L.G., RA Borkova D., Botchan M.R., Bouck J., Baycakterin P., Brottier P., RA Beeson K.Y., Benos P.V., Berman B.P., Bhandari D., Bolshakov S., RA Borkova D., Botchan M.R., Bouck J., Broketein P., Davies P., RA Gertry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P., RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P., RA Dodson K., Dup L.E., Downes M., Dugan Rocha S., Dunkov B.C., Dunn P., RA Dodson K., Dup L.E., Downes M., Dugan Rocha S., Dunkov B.C., Dunn P., RA Harris N.L., Harvey D., Heiman T.J., Hernandez J.R., Houck J., Houston K.A., Howland T.J., Wei M.-H., Ibegwam C., RA Hostin D., Houston K.A., Howland T.J., Wei M.-H., Ibegwam C., Malali M., Kalush F., Karpen G.H., Ke Z., Kennison J.A., Ketchum K.A., RA Kinmel B.E., Kodira C.D., Kraft C., Kravitz S., Kulp D., Lai Z., Lasko P., Lei Y., Levitsky A.A., Li J., Li Z., Liang Y., Lin X., RA Palazzolo M., Pittman G.S., Pan S., Pollard J., Puri V., Recse M.G., RA Palazzolo M., Pittman G.S., Pan S., Pollard J., Puri V., Reese M.G., RA Reinert K., Renington K.A., Saunders R.D.C., Scheeler F., Shen H., RA Spier E., Spradling A.C., Stapleton M., Strong R., Sun E., Sang A., Myers E.W., Weinsteck G.M., Weinsschach J., RA Zheng X.H., Woodage T., Worley K.G., Wu D., Yang S., Yao Q. A., Pittman G.S., Zhan M., Zhang G., Zhao Q., Zheng L., Ran G. Sheng T., Zhong W., Zhou N., Smith H.O., Smith H.O.,
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M87F_DROME
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=88211557; PubMed=2835228;
Kuhn R., Schaefer U., Schaefer M.;
"Cis-acting regions sufficient for spermatocyte-specific transcriptional and spermatid-specific translational control of the Drosophila melanogaster gene mst(3)gl-9.";
EMBO J. 7:447-454(1988).
                                                           Zheng X.H., Zhong F.N., Zhong W., Zhou X., Zhu S., Gibbs R.A., Myers E.W., Rubin G.M., Venter J.C.; "The genome sequence of Drosophila melanogaster."; Science 287:2185-2195(2000).
  -!- DEVELOPMENTAL STAGE:
                                       -i- TISSUE SPECIFICITY: TESTIS.
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IS MOSTLY COMPOSED OF
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REPETITIVE C-G-P
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-: FUNCTION: METALLOTHIONEINS HAVE A HIGH CONTENT OF CYSTEINE
-: FUNCTION: METALLOTHIONEINS HAVE A HIGH CONTENT OF CYSTEINE
-: DOMAIN: CLASS I METALLOTHIONEINS CONTAIN 2 METAL-BINDING DOMAINS:
-: DOMAIN: CLASS I METALLOTHIONEINS CONTAIN 2 METAL-BINDING DOMAINS:
-: FOUR DIVALENT IONS ARE CHELATED WITHIN CLUSTER A OF THE ALPHA
DOMAIN AND ARE COORDINATED VIA CYSTEINLE THIOLATE BRIDGES TO 11
CYSTEINE LIGANDS. CLUSTER B, THE CORRESPONDING REGION WITHIN THE
BETA DOMAIN, CAN LIGATE THREE DIVALENT IONS TO 9 CYSTEINES.
-: SIMILARITY: BELONGS TO FAMILY 1 IN METALLOTHIONEIN SUPERFAMILY.
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the European Bioinformatics Institute. There are no use by non-profit institutions as long as its cont modified and this statement is not removed. Usage by entitles requires a license agreement (See http://www.
                                                                     This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Actinopterygii; Neopterygii; Teleostei; Euteleostei; Neoteleostei;
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the European Bioinformatics Institute. There are no restrictions on
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modified and this statement is not removed. Usage by and for commen
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Acanthomorpha; Acanthopterygii; Percomorpha; Perciformes; Percoidei; Sparidae; Sparus.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Spermatogenesis; Repeat; Multigene family. SEQUENCE 56 AA; 5233 MW; 830CD13212C34A47 CRC64;
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                                                                                                                                                                                                                                                                                   Cousinou M., Lopez-Barea J.
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RA KILLE P., Olsson P.E.;

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P09862;
                MEDLINE=88111026; PubMed=2448099;
Bonham K., Zafarullah M., Gedamu L.;
"The rainbow trout metallothioneins: molecular cloning
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                                                  SEQUENCE FROM N.A.
                                                                    Protacanthopterygli;
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cterization of two distinct cDNA:519-528(1987).
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PIR; S15997; S16997.

PIR; S1599; S1509.

HSSP; P04355; ZMRT.

INTERPRO; IPRO00006; -

INTERPRO; IPRO03019; -

PFAM; PF00131; metalthio; 1
  METAL
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"Metallothionein cDNA sequences and gene expression in arctic char

"Metallothionein cDNA sequences and gene expression in arctic char

(Salvelinus alpinus) following metal and PCB exposure.";

MAI. Environ. Res. 46:551-554(1998).

-!- FUNCTION: METALLOTHIONEINS HAVE A HIGH CONTENT OF CYSTEINE

RESIDUES THAT BIND VARIOUS HAVE A HIGH CONTENT OF CYSTEINE

-!- DOMAIN: CLASS I METALLOTHIONEINS CONTAIN 2 METAL-BINDING DOMAINS:

FOUR DIVALENT IONS ARE CHELATED MITHIN CLUSTER A OF THE ALPHA

DOMAIN AND ARE COORDINATED VIA CYSTEINUT THIOLATE BRIDGES TO 11

CYSTEINE LIGANDS. CLUSTER B. THE CORRESPONDING REGION MITHIN THE

BETA DOMAIN, CAN LIGATE THREE DIVALENT IONS TO 9 CYSTEINES.

-!- SIMILARITY: BELONGS TO FAMILY 1 IN METALLOTHIONEIN SUPERFAMILY.
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PROSITE; PS00203; METALLOTHIONEIN_VRT;
Metal-binding; Metal-thiolate cluster;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Elucidation of cDNA sequences for metallothioneins from rainbow "contraction of cDNA sequences for metallothioneins from rainbow the properties of the polymerase chain
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A. SPECIES=O.MYKISS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Zafarullah M., Bonham K., Gedamu L.;
"Structure of the rainbow trout metallothionein B gene characterization of its metal-responsive region.";
Mol. Cell. Biol. 8:4469-4476(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Biochim. Biophys. Acta 1089:407-410(1991).
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SEQUENCE FROM N.A.
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PRINTS; PR00860; MTVERTEBRATE.
PROSITE; P800203; METALLOTHIONEIN_VRT;
PROSITE; P800203; Metallothiolate cluster;
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or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                   use by non-profit institutions as long modified and this statement is not removed entities requires a license agreement (See
                                                                                                                                                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the Entropean Bioinformatics Institute. There are no resta
                                                                                                                                                                                                                                                                                                                                                                                                                                        Salmo salar (Atlantic salmon).

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Eu

Actinopterygii, Neopterygii; Teleostei; Buteleostei;

Protacanthopterygii; Salmoniformes; Salmonidae; Salmo.
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                                                                                                                                                                                            EMBL; X97275; HSSP; P18055;
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Submitted (APR-1996) to the
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DOMAIN: CLASS I METALLOTHLONEINS CONTAIN 2 METAL-BINDING DOMAINS: FOUR DIVALENT IONS ARE CHELATED WITHIN CLUSTER A OF THE ALPHA DOMAIN AND ARE COORDINATED VIA CYSTEINYL THIOLATE BRIDGES TO 11 CYSTEINE LIGANDS. CLUSTER B. THE CORRESPONDING REGION WITHIN THE BETA DOMAIN, CAN LIGATE THREE DIVALENT IONS TO 9 CYSTEINES. SIMILARITY: BELONGS TO FAMILY 1 IN METALLOTHIONEIN SUPERFAMILY.
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Amphibia; E
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                                                                                                                                                                                                                        FUNCTION: METALLOTHIONEINS HAVE A HIGH CONTENT OF CYSTEINE RESIDUES THAT BIND VARIOUS HEAVY METALS.

DOMAIN: CLASS I METALLOHIONEINS CONTAIN 2 METAL-BINDING DOMAINS: FOUR DIVALENT IONS ARE CHELATED WITHIN CLUSTER A OF THE ALPHA DOMAIN AND ARE COORDINATED VIA CYSTEINYL THIOLATE BRIDGES TO 11 CYSTEINE LIGANDS. CLUSTER B, THE CORRESPONDING REGION WITHIN THE BETA DOMAIN, CAN LIGATE THREE DIVALENT IONS TO 9 CYSTEINES.

SIMILARITY: BELONGS TO FAMILY 1 IN METALLOTHIONEIN SUPERFAMILY.
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Batrachia; Caudata; Salamandroidea; Ambystomatidae;
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vs; METALLOTHIONEIN_VRT; 1.
Metal-thiolate cluster; Chelation

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Submitted (APR-1996) to the EMBL/Genbank/DDBJ databases.
Submitted (APR-1996) to the EMBL/Genbank/DDBJ databases.

FUNCTION: METALLOTHIONEINS HAVE A HIGH CONTENT OF CYSTEINE
RESIDESS THAT BIND VARIOUS HEAVY METALS (BY SIMILARITY).

FOURIN: CLASS I METALLOTHIONEINS CONTAIN 2 METAL-BINDING DOMAINS:
FOUR DIVALENT IONS ARE CHELATED WITHIN CLUSTER A OF THE ALPHA
DOMAIN AND ARE COORDINATED VIA CYSTEINEL THIOLATE BRIDGES TO 11
CYSTEINE LIGANDS. CLUSTER B, THE CORRESPONDING REGION MITHIN THE
BETA DOMAIN, CAN LIGATE THREE DIVALENT IONS TO 9 CYSTEINES.

FOUR DIVALENT SELECTIONS TO FAMILY 1 IN METALLOTHIONEIN SUPERFAMILY.
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P52722;
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                                                        EMBL; X97278; CAA65933.1;
HSSP; P18055; 1MRB.
ZFIN; ZDB-GENE-990415-159;
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Bukaryota; Metazoa; Chordata; Cranitata; Petebrata; E
Actinopterygii, Neopterygii; Teleostei; Euteleostei;
Cypriniformes; Cyprinidae; Rasborinae; Danio.
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SEQUENCE
       PRINTS; PR00860; MTVERTEBRATE. PROSITE; PS00203; METALLOTHION
                           INTERPRO; IPR003019; PFAM; PF00131; metal
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non-profit institutions as long
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Carassius auratus (Goldfish).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Actinopterygil; Neopterygil; Teleostei; Euteleostei; Ostariophysi
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"PCR-cloning of goldfish and tilapia metallothionein complementary
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                                                            FUNCTION: METALLOTHIONEINS HAVE A HIGH CONTENT OF CYSTEINE RESIDUES THAT BIND VARIOUS HEAVY METALS (BY SIMILARITY).

DOMAIN: CLASS I METALLOTHIONEINS CONTAIN 2 METAL-BINDING DOMAINS: FOUR DIVALENT IONS ARE CHELATED WITHIN CLUSTER A OF THE ALCHA DOMAIN AND ARE COORDINATED VIA CYSTEINYL THIOLATE BRIDGES TO 11 CYSTEINE LIGANDS. CLUSTER B, THE CORRESPONDING REGION WITHIN THE BETA DOMAIN, CAN LIGATE THREE DIVALENT IONS TO 9 CYSTEINES.

SIMILARITY: BELONGS TO FAMILY 1 IN METALLOTHIONEIN SUPERFAMILY.
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-i- FUNCTION: METALLOTHIONEINS HAVE A HIGH CONTENT OF CYSTEINE
-i- EQUATIONS THAT BIND VARIOUS HEAVY METALS (BY SIMILARITY).
-i- DOMAIN: CLASS I METALLOTHIONEINS CONTAIN 2 METAL-BINDING DOMAINS:
FOUR DIVALENT IONS ARE CHELATED WITHIN CLUSTER A OF THE ALPHA
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HSSP; P18055; LMRB.
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INTERPRO; IPRO03019; -.
PFAM; PF00131; metalthio;
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Submitted
                                           Cyprinus carpio (Common carp).

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi
Cypriniformes; Cyprinidae; Cyprininae; Cyprinus.
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                                                                                                                                      FUNCTION: METALLOTHIONEINS HAVE A HIGH CONTENT OF CYSTEINE RESIDUES THAT BIND VARIOUS HEAVY METALS (BY SIMILARITY).

DOMAIN: CLASS I METALLOTHIONEINS CONTAIN 2 METAL-BINDING DOMAINS: FOUR DIVALENT IONS ARE CHELATED WITHIN CLUSTER A OF THE ALPHA DOMAIN AND ARE COORDINATED VIA CYSTEINYL THIOLATE BRIDGES TO 11 CYSTEINE LIGANDS. CLUSTER B, THE CORRESPONDING REGION WITHIN THE BETA DOMAIN, CAN LICATE THREE DIVALENT IONS TO 9 CYSTEINES.

SIMILARITY: BELONGS TO FAMILY 1 IN METALLOTHIONEIN SUPERFAMILY.
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"Molecular cloning of metallothionein genes from two important aquaculture fish species: the European seabass (Dicentrarchus labrax) and the striped bass (Morone saxatilis).";

Submitted (OCT-1999) to the EMBL/GenBank/DDBJ databases.
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DOMAIN: CLASS I METALLOTHIONEINS CONTAIN 2 METAL-BINDING DOMAINS: FOUR DIVALENT IONS ARE CHELATED WITHIN CLUSTER A OF THE ALPHA
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Kille P., Stephens P.E., Kay J.;
"Elucidation of cDNA sequences for metallothioneins from rainbow
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DOMAIN: CLASS I METALLOTHIONEINS CONTAIN 2 METAL-IBINDING DOMAINS: FOUR DIVALENT IONS ARE CHELATED WITHIN CLUSTER A OF THE ALPHA DOMAIN AND ARE COORDINATED VIA CYSTEINYL THIOLATE BRIDGES TO 11 CYSTEINE LIGANDS. CLUSTER B, THE CORRESPONDING REGION WITHIN THE BETA DOMAIN, CAN LIGATE THREE DIVALENT IONS TO 9 CYSTEINES.

SIMILARITY: BELONGS TO FAMILY 1 IN METALLOTHIONEIN SUPERFAMILY.
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